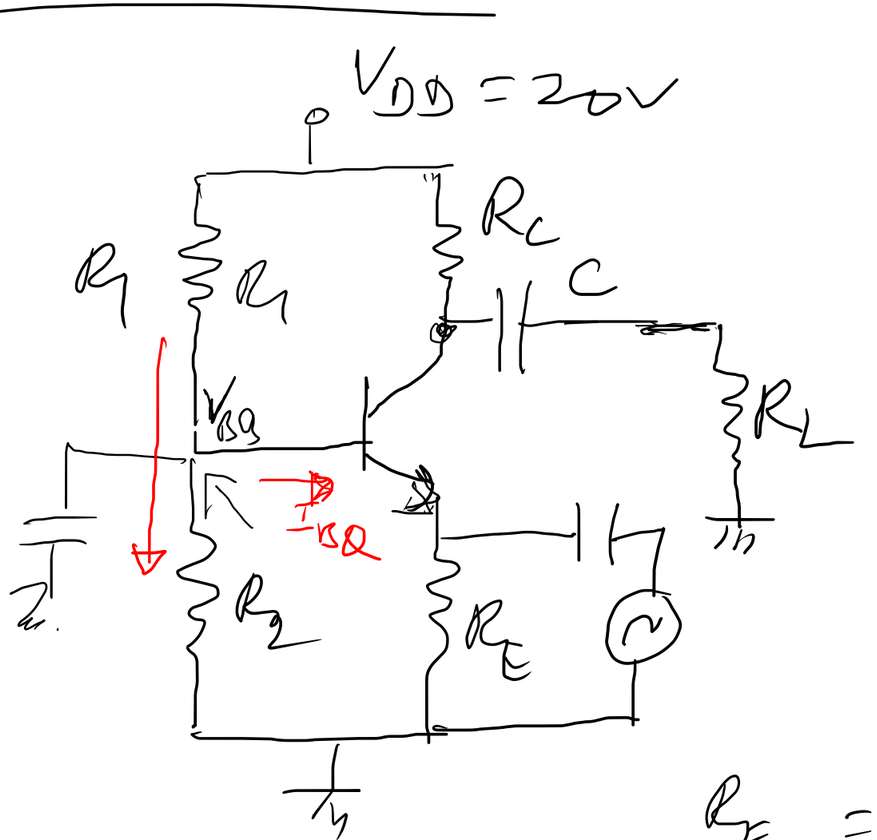
26/3/2021

CB Amplifier



$V_{DD} = 20V$

$I_{CQ} = 1mA$

$$R_C = \frac{10}{1mA} = 10k\Omega$$

10% of V_{DD} $(\approx V_{R_E}) = 2V$.

$$R_E = \frac{2}{1mA} = 2k\Omega$$

$$I_{BQ} = \frac{I_{CQ}}{\beta} = \frac{1mA}{50} = 20\mu A.$$

$$V_{BB} = V_{RE} + V_{BE} = 2 + 0.7 \sim 3V$$

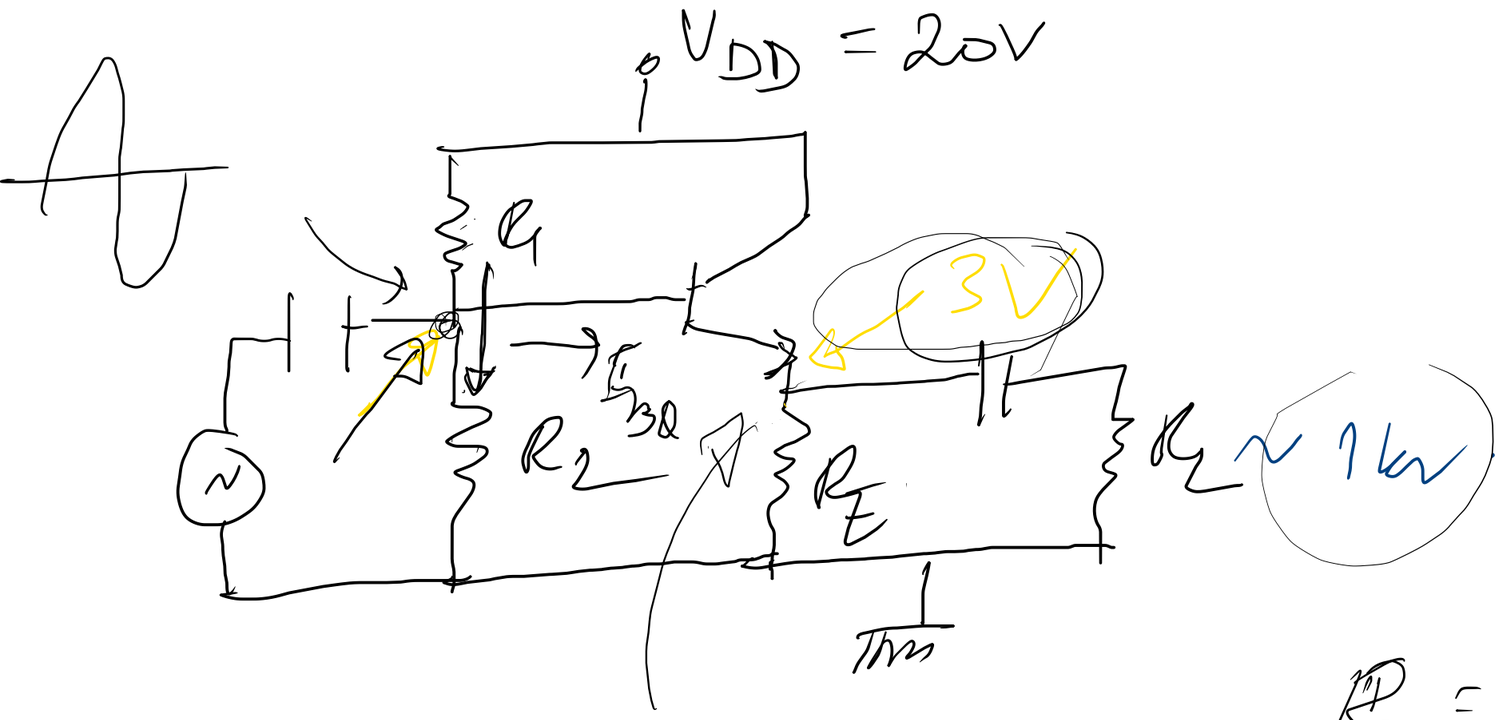
$$(R_1 + R_2) = \frac{2_0}{20\mu A \times 10} = 100 k\Omega.$$

$I_{BQ} \times 10$

$$\frac{R_2}{R_1+R_2} V_{DD} = 3V$$

$$\left.\begin{aligned} R_2 &= 15k\Omega \\ R_1 &= 85k\Omega \end{aligned}\right\}$$

CC Amplifier :



$$R_E = \frac{10}{3\,mA} \simeq 3k\Omega.$$

$$V_{BB} = 10 + 0.7 + 3 \simeq 14V$$

$$I_B = \frac{3mA}{\beta} = \frac{3mA}{50}$$

$$\frac{V_{DD}}{10 \times I_B} = \frac{20}{10 \times \frac{3mA}{50}} \sim 33k\Omega$$

$$\frac{V_{DD} \times R_2}{R_1 + R_2} \simeq V_{BB} = 14V \quad \left| \begin{array}{l} R_1 \sim 10k\Omega \\ R_2 = 23k\Omega \end{array} \right.$$